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ABSTRACT

The elicited speech of 26 Turkish children ranging in age from 2:0 to 4:6 was examined with respect to causality. The developmental sequence of the acquisition of causal connectives showed a progression from the use of no explicit connectives to the acquisition of connectives that are context-dependent. The next stage in this progression was the acquisition of connectives that are independent of contextual support. Thus relations expressed with deictic reference within the situational context emerge first, while relations expressed with anaphoric reference within the linguistic context emerge next. Finally, relations that are independent of context and established only through logical connection are the last to be acquired. (Author/JB)

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THE ACQUISITION OF CAUSAL CONNECTIVES IN TURKISH

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In a recent review article on the acquisition of complex sentences, Bowerman (in press) has noted the scarcity of studies tracing this development in spontaneous speech. Most of the information available is based on experimental investigations of comprehension. The developmental sequence observed in the few studies of spontaneous speech (Brown, 1973; Clancy, Jacobsen & Silva, 1976; Hood, 1977; Limber, 1973) reveals that embedded sentences are acquired before coordinated sentences which, in turn, precede subordinated constructions. Prior to the emergence of given lexical forms (which occurs around 2;6-3;0 years for the Indo-European speaking child) constructions by simple juxtaposition of the clauses in temporal order are observed. The first conjunctions to be acquired and used most frequently are the coordinating structures and and and then. Next are because, so, when, if, or, but, while, before and after, apparently in a variable order (Clancy, Jacobsen & Silva, 1976). The present report contributes to this body of information with data from a non-Indo-European language. It concerns the acquisition of syntactic connectives that function in the expression of complex causal relations in Turkish.

In this study causation is taken as a "relationship between two or more distinct states of affairs that are encoded in entire propositions". Thus, with focus on connective devices, the analysis is confined to inter-propositional expressions of causal nature. The syntactic and semantic characteristics of these connective forms and their discourse functions are discussed in order to explain the observed order of emergence in terms of psycholinguistic complexity.

The devices of cohesion in language that have been outlined by Halliday & Hasan (1976) was adopted as a framework for the analysis. Halliday & Hasan have distinguished three types of relations that bring about cohesion: 1) Identity of Reference, 2) Identity of Form, and 3) Logical Connection. The first type of relation involves the establishment of relations between sentences at the semantic level. Its major means are deictic words which are elements that link the referent to its situational or verbal context. In this category are devices like pronouns, demonstratives and deictic adverbs. If deixis is operating only at the discourse level, the

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deictic element has the function of anaphoric reference, ie., pointing to something that was mentioned before in the linguistic context. The second type of relation operates at the surface structural level and is based on identity of form. It includes the mechanisms of ellipsis and substitution. Ellipsis has the function of condensing sentences by omission of unnecessary words when these repeat content given elsewhere in the sentence, usually earlier. The omitted word, phrase or proposition can be predicted from the linguistic context, ie., the utterance is context-dependent. Substitution on the other hand, involves the replacement of a complicated expression by a simpler one (pro-verbs, pro-nouns). At this level, pronouns have only anaphoric function but no deictic function. The third type of relation, logical connection, is formally realized by conjunctions, where the continuity between sentences is established not through meaning or form, but through logical connection. Since this type of relation involves combining simple propositions into complex ones, syntactic mechanisms like coordination, relativization and complementation are included in this category.

In this analysis of the expression of complex causal notions primary interest was in relations constructed with conjunctions. However, relations established by deixis, ellipsis and anaphoric reference within discourse, were as important. Ellipsis is functional in constructing responses to questions. Some deictic words, in combination with other syntactic elements, form conjunctions. Such forms (eg. therefore, that's why, from that) function for anaphoric reference. These forms thus unite in themselves the referential and logical relations necessary for linking propositions in discourse.

Method

The subjects were 26 Turkish children who comprised part of the Turkish sample of the Berkeley Cross-Linguistic Acquisition Project[1]. They ranged from 2;0 to 4;6 in age and were studied cross-sectionally. In addition, longitudinal data from 3 subjects between the ages of 21-28 mos. were used to shed light on the earlir phases of this acquisition process.

The speech samples used in this study were collected during the course of free play where an experimenter while playing with the child asked some standard questions. Four of these were Why-questions and were conducive to the production of causal conjunctions.

All spontaneous utterances and question responses encoding a cause-effect relation, with or without the

explicit use of a causal connective were extracted from the transcripts of each subject. The semantic intention of the child was interpreted on the basis of both non-linguistic and linguistic contextual information, ie., the preceding and following adult utterances. The age at which a given surface form was first used was noted. These surface forms were ordered according to age of emergence and increasing frequency of use across the sample.

Results and Discussion

A major observation was that words functioning as connectives emerge first in response to adult questions. Specifically, a given connective does not appear in the spontaneous utterances of a given subject before it appears in his response to a question. Thus, discourse was seen as the supportive context for the construction of cohesive relations. The importance of dialogue for the child's building up of his linguistic system has been noted by many investigators. Halliday (1975) reported that the advance to level of grammatical constructions coincided with the ability to engage in dialogue. Bloom, Rocissano & Hood (1975), in their analysis of the relation between child's output and the antecedent adult sentence, concluded that knowledge of grammar emerges from discourse. Most relevant to the issue here, both Clancy (1974) and Bates (1976) noted that the first occurrence of connectives in Italian children's speech was in the context of responses to questions.

The order of acquisition of causal connectives observed for the Turkish children is summarized in Table 1. For an understanding of this order, a discussion of each form in terms of its syntactic and semantic characteristics and discourse functions follows.

	Age: 2;0	2;4-2;6	2;8	3;0
Cause - Effect	X			
Effect - Cause	X			
Işte	X			
De	X			
-ince		X		
Ondan		X		
Diye				
Onun için			X	
-mek için & -digi için			X	
Çünkü				X
				X

Table 1. Order of emergence of Connecting devices in terms of the Age they become productive for causal relations.

I. No Explicit Connectives

The earliest means by which dependency relations were expressed was the sequencing of two propositions without the use of any explicit connective (at age 2;0). Both the orders of cause-effect and effect-cause were present at this age. However, these were systematically related to the type of relationship being established. The order cause-effect was used for setting up relations of empirical cause between two events. And the order effect-cause was followed for expressing relations of motivational type between intentions and acts. Simultaneous presence of the two orders in the speech of children as young as 1;6-2;0 has also been reported by Jacobsen (1974), Clancy (1974) and Hood (1977).

The cause-effect order conforms to the strategy of following the temporal order of occurrence of events. It has, therefore, been claimed that this order is conceptually easier and developmentally earlier to emerge (Werner & Kaplan, 1963; Clark, 1970). Even if this argument is accepted, the reverse order of effect-cause need not be conceptually any more difficult. Basically, the child does not need to follow order of occurrence when he is talking about his own intentions and actions. It is reasonable that when there is no concrete physical order of events to be followed, the intended action should be mentioned first and then supported by its justification. In fact, such expressions do not have to follow temporal order at all since 'reasons', being propositional in nature, are different from 'causes'.

II. Context-dependent Connectives

The earlier set of forms used as connectives by the children, namely işte, de, ondan, and onun için (=there, and then/so, from that, for that reason), construct relations at the level of discourse, through deixis, ellipsis, and substitution with anaphoric reference. The forms that were acquired earlier were those functional in the construction of utterances which can be context-dependent. The child, between the ages of 2;0-3;0 seems to be using those structures in his language that allow him to communicate his intentions in "grammatically incomplete but contextually appropriate and interpretable sentence fragments" (Lyons, 1977, p.589).

a. Işte

Işte is a demonstrative adverb that serves for reference at the level of both nonlinguistic and linguistic contexts. Its basic function is to assert the certainty of the action

or event. It is a deictic word used to point to objects in the perceptual context, usually accompanied by a pointing gesture. In discourse, as an anaphoric device, it can refer to a proposition in the immediately preceding turn of the speaker, and thus, indicates its presupposition. In children's speech işte is most commonly observed either by itself or in final position after an action statement. It corresponds to the English speaking child's "there".

Given that işte has no connective function but only adds positiveness to an assertion, its occurrence in response to why-questions was not expected at all. However, this co-occurrence could be explained if approached from a discourse perspective. The following example illustrates its function as an anaphoric device, referring back to the adult's question.

(1) (2;8)

E: Köpekler niye içer
Why do dogs drink?

Içer işte, çocuklar içer
drink just so, children drink
they just drink, children drink

The early acquisition of işte for discourse reference must be due to its deictic nature. Just as pointing is one of the first means that the child uses in the context of action, deixis is the easiest linguistic mechanism. Longitudinal data from 3 subjects between 21-28 mos. show that use of işte is at first to make reference to the perceptual context, and only afterwards to the linguistic context. Deixis allows the child to indicate what he wants to without having to verbalize, and thus, recreate mentally.

b. De (= too, also, and then, and so)

This particle functions as a conjunction, meaning "and, and then, and so", or as an adverb, meaning "too, also". At the level of discourse, it has elliptical use. The first function of the particle de for the Turkish child was as an adverb modifying demonstrative or personal pronouns. With this use, rudimentary order relations become apparent in language. One object is acted upon in a certain fashion. Then the next object, which is regarded as a member of the same class, is treated in the same manner. The order relations get a bit more elaborated in the use of the particle de as a conjunction. This second function is similar to the "asymmetric" and in English which imposes a temporal order on the sentences it links. The first conjunct is assumed to be prior to the second on a temporal-causal dimension. In this case, it is the actions rather than

entities that are being conjoined into a sequence of events (ie., VP-coordination rather than NP-coordination). An example of de carrying temporal-causal relation of this nature is:

(2) (3;0) Üşümüşler de örtüyorum
cold-past-they and so cover-prog-I
They are cold and so I am covering them

c. Ondan (=from that)

This form was the first connective in the data expressing causal relations not tempered by sequential notions. Morphologically ondan is composed of the demonstrative pronoun O + ablative case suffix dan, which marks the referred entity as the "source". Thus, it is a deictic that serves reference in the situational context. This was its first function in the speech of the children. It also serves for anaphoric reference, as illustrated in the following example:

(3) (2;8) Süpürüyor işte
sweep-prog. just so
she just sweeps

Tozlar gelmiş
dust-pl. come-past
it got dusty

ondan
from-that
that's why

Syntactically, ondan conjoins two independent clauses without subordinating them. The speaker can in a way, construct his causal proposition, then point back to it with the case marked pronoun. The order of expression maps the temporal order of events, ie., cause-ondan-effect.

d. Onun için (= for that reason, therefore)

A more explicit expression of cause-effect relations was evidenced around age 2;8-3;0 in the data. Onun için is composed of the demonstrative pronoun O + the genitive /n/un and is followed by the postposition için. Its meaning corresponds to "for that reason" in English. Similar to ondan, this form has anaphoric function in discourse and keeps the two propositions it joins as independent clauses. However, onun için is morpho-syntactically more complex. Such complexity can account for its later acquisition by the child, given that both forms encode almost the same logical relation. An "apparent" semantic difference between ondan and onun için is in terms of the nature of the relationship they

establish. Ondan is used for direct, empirical causal relations, and the latter for more indirect, implicational relations.

(4) (3;8) Hem de vahşi hayvan, onun için ısırır
plus and wild animal, for that bite-pres.-(it)
and also it is a wild animal, therefore it bites.

III. Context-independent Connectives

The next set of forms acquired, namely -ince, diye, -dığı için, -mek için, çünkü (= when-cause, for, because of his ...ing, in order to, because) were conjoining devices that operate through logical connection, the third type of relation discussed in Halliday & Hasan's framework. Construction of a causal relation through the use of these forms results in a sentence which is not context dependent. As such, they demand more work for mapping underlying intentions onto surface forms because of their increased syntactic complexity. However, the transition from the construction of utterances that are dependent on the situational or linguistic context to those that are not, is gradual. When the child first starts to use conjunctions of this type, he builds his causal proposition onto the effect proposition contained in the adult utterance, taking advantage of the mechanism of ellipsis.

a. -ince (= when-cause)

-Ince, a purely syntactic device which has no discourse function, was observed at 2;4 years. Its early emergence deviates from the dominant pattern that context-dependent connectives precede context-independent connectives in acquisition. Syntactically, propositions related with this gerundive particle involve subordination. Verb + -ince constitutes the embedded adverbial clause and precedes the main clause. As Turkish is a left-branching language, this is the natural order for subordinate constructions. Semantically, its basic function is to denote action just prior to that of the main verb. It can be paraphrased as " on ...ing", denoting temporal sequence, causal relation, or both, depending on context.

(5) (2;8) Bu basınca çalışır değil mi?
this push-when works, yes?
this works when you push, yes?

The early examples illustrate the relation of "contiguity" that is capitalized on by this form. The temporal notion encoded in it is related to the durative aspect of time. Its causal sense is derived from its denotation of the inception of an action or state, ie., the coming about of causal conditions. In sum, a global relationship between two events, which are conceived of as more overlapping than discrete, is marked. Such a

semantic content corresponds closely to what has been characterized as the 2;0-3;0 year old's mode of understanding of these relations, which is one of undifferentiatedness. The fact that the successful use of the form does not require of the child to make a clear distinction between causal and temporal sequences seems to be one of the factors that would account for its early emergence. An additional factor that may have facilitative effect is that the order of mention corresponds to the order of occurrence of events in time.

b. Diye (= so that, for...,to)

Diye, the adverbial form of the verb "de" (= to say), means " for that reason, in order to". Syntactically, it involves subordination. When it conjoins an action statement with an intentional statement, diye expresses purpose or goal. In this use, the verb of the subordinate clause is in the subjunctive, introducing the sense of purpose. Expressions of purpose follow effect-cause clausal order. When diye is used for causal explanation, it keeps the order of clauses as cause-effect. As the following examples show, children use both types of constructions with diye.

(6) (4;0) Tuttum gitmesin diye
hold-past-I go-neg.-opt. for to
I held it so that it wouldn't go

(3;4) Şimdi büyüdüm diye Ibrahim diyorum
now grow-past-I for Ibrahim say-prog.-I
I call him Ibrahim because I am big now

c. -digi için (= because of his ...ing) & -mek için (= in order to)

The next emerging expressions of causal relations were those which involve complex syntactic transformations. These were the subordinate clauses constructed by nominalization of the verb followed by the postposition için, which is the most typical way for conjoining in the Turkish language. The first one, -digi için (verb + dik past participle + person için), means "because of his ...ing. The order of events represented in the two propositions is cause-effect. This structure is again observed first in the context of responses to questions. The late emergence of this form is due to its syntactic complexity as the following example illustrates:

(7) (4;8) *Kedilerin tırnakları var için
cat_pl.-of claw-pl-acc. exist for
cats have claws

Hep böyle tırnakları var, onun için tırmalar
all like this claw-pl-acc. exist, that's for scratch-pres.-pl.
it has got claws like this, that's why it scratches.

The child had difficulty in the nominalization of the verb with the past participle. Instead of using verb + past participle + accusative (ol + dug + u) with the verb "to be", the child used its adjectival form (var). However, this construction is ungrammatical when followed by the postposition için. Interestingly, she immediately corrected herself by using the earlier acquired form onun için, which does not require nominalization or subordination.

The second nominalized form with verb + infinitive and postposition, -mek için, expresses purpose. The verb of the subordinate clause is non-finite, indicating that the action is only potential. It was first observed at the age of 3;0.

(8) (3;0) E: Elbisesini niye çıkarttın?
why did you take its clothes off? (re: doll)

Işte, yıkamak için
just so, wash-to for
just, in order to wash

These nominalized constructions express the same semantic relations as onun için and diye. However, they are acquired later because of their syntactic complexity.

d. Çünkü (= because)

The conjunction çünkü, borrowed into Turkish from Persian, was of the last forms to be acquired (around 3;0). Like the English "because", it always explains the preceding statement. Çünkü, like the nominal structures just discussed, can relate propositions only through logical relation, and has no discourse function.

(9) (3;4) Anne bir daha A'la konusmıyacagım
mother once again A.-with talk-neg-fut-I
mother I won't talk to A. again

Çünkü o benimle yarış yapıyor
because he me-with race make-pres.
because he races with me

The order in which ideas get organized with this form is that of effect-cause, with a reversal of the temporal-causal sequence. Thus, çünkü calls for an explicit differentiation of causal from temporal relations. Also, it requires the ability to reverse the order of events if it is used for expression of causal relations of empirical nature. Temporal expressions with the postpositions o zaman and -dugu zaman (at the time when) emerged in the children's speech simultaneously with çünkü. This evidence supports the view that these linguistic

developments are manifestations of an underlying cognitive change, like a differentiation of causal from temporal sequences. Such additional demands at the conceptual level argue for increased semantic complexity that can account for the late emergence of the form. Since çünkü keeps the two clauses it relates as independent, none of the syntactic processes necessary for nominal complements is operative. In this developmental sequence, it appeared either simultaneously or after the complex subordinating constructions with -digi için. This suggests that semantic complexity can be a stronger determinant of order of acquisition than the mere availability of a syntactic device.

In conclusion, the developmental sequence of the acquisition of causal connectives showed a progression from the use of no explicit connectives to the acquisition of connectives which are context-dependent. The next stage in this progression was the acquisition of connectives that are independent of contextual support. In Halliday & Hasan's terms this means that relations expressed with deictic reference within the situational context emerge first, while relations expressed with anaphoric reference within the linguistic context emerge next. Finally, relations which are independent of context and established only through logical connection are acquired.

FOOTNOTES

1. For a detailed description of the design of the Berkeley Cross-Linguistic Acquisition Project, see Slobin, 1978.

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